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| EXAMINER | |
|---|---|
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/692,025 | YI ET AL. | |
| | Examiner | Art Unit | |
| | MICHAEL C. COLUCCI | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *10,12 and 14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,12 and 14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 01/23/2008 have been fully considered but they are not persuasive.

**Argument 1 (page 10 paragraph 2):**

- "In particular, Addison and Pertrushin, alone or in combination, fail to teach or suggest "extracting from the document feature terms related to the features most relevant to the subject", as required by claim 10."

**Response to argument 1:**

Examiner takes the position that Addison teaches variation in the phoneme selection and/or quantitative prosody values to simulate emotion. This is achieved through the detection of the presence and frequency of certain words associated with various emotions, the presence of certain phrases and the like. All this information can be extracted at step 351 and used to generate prosody modification information that further modifies the augmented prosody record at step 253 to reflect the appropriate emotion, which is sent for prosody depth variation at step 344 (Col. 22 lines 5-20). Further, Addison teaches applies artificial intelligence ("AI") to the recognition of the meaning of the text and identifies the emotional state of the message to be communicated, where the grapheme to phoneme database involved in instructing the synthesizer how to pronounce is addressed (Col. 22 lines 5-20).

Additionally, Addison teaches converting text to speech using a computing device having memory, where a text is received into the memory of the computing device. A set of the lexical parsing rules are applied to parse the text into a plurality of components. Pronunciation, and meaning information is associated with these components. A set of phrase parsing rules are used to generate marked up text. The marked up text is then phonetically parsed using phonetic parsing rules, and Lessac expressive parsing rules. The sounds are then stored in the memory of the computing device, each of the sounds being associated with pronunciation information. The sounds associated with the text maybe recalled to generate a raw speech signal from the marked up text after the parsing using phonetic and expressive parsing rules (Col. 3 lines 8-21).

Further, Addison teaches the incorporation of "pragmatic" rules is used to enable the achievement of more realistic spoken voice in a text to speech system. Pragmatic rules encapsulate contextual and setting information that can be expressed by modification of voice filtering parameters. Examples of pragmatic rules are rules which look to such features in text as the identity of the speaker, the setting, the part of speech of a word and the nature of the text (Col. 11 lines 45-52).

Examiner takes the position that an opinion polarity is functionally equivalent and effective as the emotional state associated with text, wherein the opinion term itself is construed as a portion of text (i.e. the emotion expressed in text). Further, Examiner takes the position that the contextual and setting

information associated with voice features is equivalent to the *subject of interest from a text document*. Addison also teaches the meaning associated with parsed components of text, which can be construed as a subject of interest. If the meaning is known, it is implied that the subject/topic of the sentence itself is known, where the subject/topic is equivalent to a feature of the sentence (i.e. the feature(s) of the sentence with meaning). Additionally, there are a number of features taught by Addison that can be extracted from text (parts of speech, pronunciation information, phonetic rule information, prosody, etc.). Further, Examiner takes the position that features of a text such as the setting or nature of the text is equivalent to the subject of interest from a text document. Therefore, opinions, opinion terms, and subject of a text can be found relative to contextual analysis based on the features extracted, wherein identifying if an opinion is present in reference to a subject or feature will be a necessary function prior to realizing the setting or nature of text.

**Argument 2 (page 10 paragraph 3):**

- "Also, Addison and Pertrushin, alone or in combination, fail to teach or suggest "for each sentence referring to the subject, determining whether the sentence includes an opinion polarity about the subject," as required by claim 10."

**Response to argument 2:**

Examiner takes the position that Pertrushin teaches a database having statistics including statistics of human associations of voice parameters with emotions, such as those shown in the tables above and FIGS. 3 through 5. Further, the database may include a series of voice pitches associated with fear and another series of voice pitches associated with happiness and a range of error for certain pitches. Next, a voice signal is received in operation 602. In operation 604, one or more features are extracted from the voice signal. Then, in operation 606, the extracted voice feature is compared to the voice parameters in the database. In operation 608, an emotion is selected from the database based on the comparison of the extracted voice feature to the voice parameters. This can include, for example, comparing digitized speech samples from the database with a digitized sample of the feature extracted from the voice signal to create a list of probable emotions and then using algorithms to take into account statistics of the accuracy of humans in recognizing the emotion to make a final determination of the most probable emotion. The selected emotion is finally output in operation 610 (Pertrushin Col. 14 line 64 – Col. 15 line 23 & Fig. 6).

Examiner takes the position that comparison and ranking of the most probable emotion based on statistics for features in combination with Addison's teaching of emotion, meaning, setting, and nature of text would allows for an equivalency to finding the most relevant features to a subject.

**Argument 3 (page 11 paragraph 2):**

- "Further, Addison and Pertrushin, alone or in combination, fail to teach or suggest "identifying opinion terms in the sentence using an opinion dictionary, each entry in the dictionary having an opinion term, a part-of-speech tag, and an associated opinion polarity," as required by claim 10."

**Response to argument 3:**

Examiner takes the position that Addison teaches the inventive system 10 begins processing with a file or record of text 12. Lexical parsing is then implemented at step 14. The first task is referred to below as tokenization. In accordance with the invention, tokenization is used to extract a word and punctuation list in sequential order from the text. The result is a word list and this word list is then processed using dictionary information at step 16. Processing includes looking up for each word: possible parts of speech which it may constitute, depending upon context, possible ambiguity, and possible word combinations in various idiomatic phrases, which are all contained in the dictionary consulted by the system at step 16. Following dictionary look up at step 16, a phrase parser identifies the end of each phrase at step 18, removes lexical ambiguity and labels each word with its actual part of speech (Col. 7 line 66 – Col. 8 line 15).

Further Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each

subject has recorded 20 or 40 utterances, yielding a corpus containing 700 utterances with 140 utterances per emotional state (Pertrushin Col. 10 lines 23-33 & Fig. 6).

Examiner takes the position that in order to compare emotional features of text to reveal the subject of interest, a dictionary or some list based data file must be accessed containing all data of the type being compared (i.e. emotion, emotional state, nature, setting, etc.).

**Argument 4 (page 11 paragraph 3):**

- "In addition, Addison and Pertrushin, alone or in combination, fail to teach or suggest "for each sentence having a feature term and an opinion term, parsing the sentence with an English parser to identify grammatical components in the sentence and relationships between said components," as required by claim 10."

**Response to argument 4:**

Examiner takes the position that Addison teaches the inventive system 10 begins processing with a file or record of text 12. Lexical parsing is then implemented at step 14. The first task is referred to below as tokenization. In accordance with the invention, tokenization is used to extract a word and punctuation list in sequential order from the text. The result is a word list and this word list is then processed using dictionary information at step 16. Processing includes looking up for each word: possible parts of speech which it may

constitute, depending upon context, possible ambiguity, and possible word combinations in various idiomatic phrases, which are all contained in the dictionary consulted by the system at step 16. Following dictionary look up at step 16, a phrase parser identifies the end of each phrase at step 18, removes lexical ambiguity and labels each word with its actual part of speech (Col. 7 line 66 – Col. 8 line 15).

Further, Examiner takes the position that Addison teaches variation in the phoneme selection and/or quantitative prosody values to simulate emotion. This is achieved through the detection of the presence and frequency of certain words associated with various emotions, the presence of certain phrases and the like. All this information can be extracted at step 351 and used to generate prosody modification information that further modifies the augmented prosody record at step 253 to reflect the appropriate emotion, which is sent for prosody depth variation at step 344 (Col. 22 lines 5-20). Further, Addison teaches applies artificial intelligence ("AI") to the recognition of the meaning of the text and identifies the emotional state of the message to be communicated, where the grapheme to phoneme database involved in instructing the synthesizer how to pronounce is addressed (Col. 22 lines 5-20).

**Argument 5 (page 12 paragraph 2):**

- "In addition, Addison and Pertrushin, alone or in combination, fail to teach or suggest "identifying an opinion polarity associated with said feature term using the opinion dictionary," as required by claim 10."

**Response to argument 5:**

Examiner takes the position that Addison teaches the inventive system 10 begins processing with a file or record of text 12. Lexical parsing is then implemented at step 14. The first task is referred to below as tokenization. In accordance with the invention, tokenization is used to extract a word and punctuation list in sequential order from the text. The result is a word list and this word list is then processed using dictionary information at step 16. Processing includes looking up for each word: possible parts of speech which it may constitute, depending upon context, possible ambiguity, and possible word combinations in various idiomatic phrases, which are all contained in the dictionary consulted by the system at step 16. Following dictionary look up at step 16, a phrase parser identifies the end of each phrase at step 18, removes lexical ambiguity and labels each word with its actual part of speech (Col. 7 line 66 – Col. 8 line 15).

Further Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each subject has recorded 20 or 40 utterances, yielding a corpus containing 700

utterances with 140 utterances per emotional state (Pertrushin Col. 10 lines 23-33 & Fig. 6).

Examiner takes the position that in order to compare emotional features of text to reveal the subject of interest, a dictionary or some list based data file must be accessed containing all data of the type being compared (i.e. emotion, emotional state, nature, setting, etc.).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically taught or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: **(See MPEP Ch. 2141)**

a. Determining the scope and contents of the prior art;
b. Ascertaining the differences between the prior art and the claims in issue;
c. Resolving the level of ordinary skill in the pertinent art; and
d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

3. Claims 10, 12, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Addison et al US 6865533 B2 (herein after Addison) in view of Pertrushin US 6151571 A (herein after Pertrushin).

Re claim 10, Addison teaches a method for extracting opinions (Col. 22 lines 5-20) about a subject of interest from a text document (Col. 11 lines 45-52) having a plurality of sentences (Col. 3 lines 8-21), the subject associated with a plurality of features (Col. 22 lines 5-20), the method comprising.

for each sentence referring to the subject, determining whether the sentence includes an opinion polarity about the subject (Col. 27 line 47 – Col. 28 line 7) comprises.

identifying opinion terms in the sentence using an opinion dictionary (Col. 7 line 66 – Col. 8 line 15), a part-of-speech tag, and an associated opinion polarity (Col. 7 line 66 – Col. 8 line 15 & Fig. 1)

for each sentence having a feature term and an opinion term, parsing the sentence with an English parser (Col. 7 line 66 – Col. 8 line 15) to identify grammatical components (Col. 9 line 46-60) in the sentence and relationships between said components, and identifying an opinion polarity (Col. 27 line 47 – Col. 28 line 7) associated with said feature term (Col. 12 line 1-15) using the opinion dictionary (Col. 7 line 66 – Col. 8 line 15).

(Both Addison and Pertrushin teach a dictionary/lexicon used to store terms and information related to the terms. Pertrushin teaches a corpus with utterances for each emotional state (Pertrushin Col. 10 line 23-33). Pertrushin also teaches terms such as adverbs, verbs, adjectives, and conjunctions, where these word types are a part of speech)

However, Addison fails to particularly teach extracting from the document feature terms related to the features most relevant to the subject (Pertrushin Col. 14 line 64 - Col. 15 line 23).

for each sentence referring to a feature term, determining whether the sentence includes an opinion polarity about the feature term (Pertrushin Col. 14 line 64 – Col. 15 line 23);

each entry in the dictionary having an opinion term (Pertrushin Col. 10 lines 23-33),

Pertrushin teaches the specification of the relationship between two or more nominal terms where the relationship is described in terms of action (Pertrushin Col. 58 line 42-54). Pertrushin teaches a database having statistics including statistics of human associations of voice parameters with emotions, such as those shown in the tables above and FIGS. 3 through 5. Further, the database may include a series of voice pitches associated with fear and another series of voice pitches associated with happiness and a range of error for certain pitches. Next, a voice signal is received in operation 602. In operation 604, one or more features are extracted from the voice signal. Then, in operation 606, the extracted voice feature is compared to the voice parameters in the database. In operation 608, an emotion is selected from the database based on the comparison of the extracted voice feature to the voice parameters. This can include, for example, comparing digitized speech samples from the database with a digitized sample of the feature extracted from the voice signal to create a list of probable emotions and then using algorithms to take into account

statistics of the accuracy of humans in recognizing the emotion to make a final determination of the most probable emotion. The selected emotion is finally output in operation 610.

Further, Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each subject has recorded 20 or 40 utterances, yielding a corpus containing 700 utterances with 140 utterances per emotional state.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention extracting text features and determining if text contains an opinion and opinion term, wherein an opinion dictionary is accessed to compare the features to find the most relevant terms to the subject of the text. Using opinion and opinion polarity with respect to features from text to find the subject of interest allows for a concise representation or summary of text data, wherein the summary can be used to save both processing time and time taken by a user to interpret input text. Further, assigning an opinion polarity reduces the error rate, wherein opinion assignment ensures high performance semantic and syntactic analysis during the detection of emotions.

Re claim 12, Addison teaches a method as recited in claim 10, wherein the opinion polarity associated with the feature (Col. 22 lines 5-20) term is identified based on an opinion rule (Col. 3 line 8-21).

Re claim 14, Addison teaches a method as recited in claim 12, wherein the rule base comprises a plurality of each having a relationship term (Col. 3 line 8-21), a polarity of the opinion (Col. 27 line 47 – Col. 28 line 7).

However, Addison fails to teach a target of the opinion (Pertrushin Fig. 6 & Tables 2 and 10)

Pertrushin teaches a database accessed for comparison to voice features. The database as taught by Pertrushin contains parts of speech and what Pertrushin refers to as descriptors that describe a term (i.e. correct, wrong, weak, and strong). A set of opinion rules and an opinion dictionary are construed to be both functionally equivalent to one another. Further, Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each subject has recorded 20 or 40 utterances, yielding a corpus containing 700 utterances with 140 utterances per emotional state.

*(The source of the opinion is construed as the portion of text that contains an opinion term, polarity, and target.)*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention rules having a target of an opinion in addition to a polarity of opinion. Having a target of the opinion allows for the recognition of the term that alters (the modifier) the emotional state of the text in document (i.e. "not", "yes", "no", "confirmed").

Re claim 15, Addison teaches a method as recited in claim 12, wherein the rule base comprises a plurality of rules each having a relationship term (Col. 3 line 8-21), a source of the opinion (Col. 27 line 47 – Col. 28 line 7)

However, Addison fails to teach a target of the opinion (Pertrushin Fig. 6 & Tables 2 and 10)

Pertrushin teaches a database accessed for comparison to voice features. The database as taught by Pertrushin contains parts of speech and what Pertrushin refers to as descriptors that describe a term (i.e. correct, wrong, weak, strong). A set of opinion rules and an opinion dictionary are construed to be both functionally equivalent to one another. Further, Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each subject has recorded 20 or 40 utterances, yielding a corpus containing 700 utterances with 140 utterances per emotional state.

*(The source of the opinion is construed as the portion of text that contains an opinion term, polarity, and target.)*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention rules having a target of an opinion in addition to a polarity of opinion. Having a target of the opinion allows for the recognition of the term that alters (the modifier) the emotional state of the text in document (i.e. "not", "yes", "no", "confirmed").

Re claim 16, Addison teaches a method as recited in claim 15, a component of the sentence to which the opinion is to be assigned (Col. 27 line 47 – Col. 28 line 7).

However, Addison fails to teach a target of the opinion (Pertrushin Fig. 6 & Tables 2 and 10)

Pertrushin teaches a database accessed for comparison to voice features. The database as taught by Pertrushin contains parts of speech and what Pertrushin refers to as descriptors that describe a term (i.e. correct, wrong, weak, strong). A set of opinion rules and an opinion dictionary are construed to be both functionally equivalent to one another. Further, Pertrushin teaches sentences recorded five times; each time, the subject portrays one of the following emotional states: happiness, anger, sadness, fear/nervousness and normal (unemotional). Five subjects can also record the sentences twice with different recording parameters. Thus, each subject has recorded 20 or 40 utterances, yielding a corpus containing 700 utterances with 140 utterances per emotional state.

*(The source of the opinion is construed as the portion of text that contains an opinion term, polarity, and target.)*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention rules having a target of an opinion in addition to a polarity of opinion. Having a target of the opinion allows for the recognition of the term that alters (the modifier) the emotional state of the text in document (i.e. "not", "yes", "no", "confirmed").

Re claim 17, Addison teaches a method as recited in claim 15, wherein the source of the opinion (Col. 27 line 47 – Col. 28 line 7) is a component of the sentence of which opinion polarity is to be assigned to the target (Col. 27 line 47 – Col. 28 line 7).

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5978820 A, US 5371673 A, US 6199034 B1, US 6487545 B1, US 20020062368 A1, US 5761666 A, US 7024362 B2, US 5642522 A, US 5721938 A.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

## *Contact*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)-270-1847. The examiner can normally be reached on 9:30 am - 6:00 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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